ON

A NEW METHOD

OF

DETERMINING THE PRESENCE OF, AND RECOVERY FROM, TRUE RINGWORM.

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ON A NEW METHOD OF DETERMINING THE PRESENCE OF, AND RECOVERY FROM, TRUE RINGWORM.*

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I think it will be conceded by all practical dermatologists, that there are cases of true ringworm, and also phases of this disorder, which are not immediately and distinctly recognisable, or which, at least, require some careful investigation before a decided opinion is expressed about them.

It is in such instances, and also for the determination of the amount of parasitic disease in any given patch, that I venture to recommend, as an aid to the diagnosis, the application of chloroform to the affected part of the scalp.

A few drops are to be poured upon the head of the patient, who must be placed in a good light, between the operator and the window. On evaporation of the chloroform, the affected hairs, generally short, broken off, and twisted at their extremities, are seen to become of a yellowish-white colour, opaque, and like fine filaments of a vegetable lichen. The healthy hairs are quite uninfluenced by the chloroform. Not only upon the hairs is this change observable, but the skin in the immediate neighbourhood is commonly affected in a similar manner. Small whitish masses are seen upon the scalp, and especially at the point of emergence of the hairs. This effect is due, I

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believe, to *débris* of the parasite mixed up with the sebaceo-epithelial matter extruded from the hair-follicles. The parts look as if sprinkled with a film of highly divided sulphur powder, reminding one of vines that have been washed with sulphur lotion for grape disease.

If ether be used instead of chloroform, no such change takes place. And if the scalp and hairs be well rubbed and cleansed from sebaceous matters by ether, the specific effect is at once produced on the subsequent addition of chloroform.

As already stated, the opaque hairs become manifest immediately on the drying up of the patch, and thus the local application of chloroform becomes a perfectly accurate test of the infection, or the reverse, of the part. The change in appearance is generally very striking, and may be observed by an untried eye.

If these opaque hairs be examined microscopically, the spores can still be clearly seen in their interior. The shaft is desiccated, the oily matters are removed, and the fibre-cells are found somewhat split up at the margins. It would seem that the spaces which occur in the shaft, as the result of sporadic intrusion and development, and consequent disintegration of fibre-cells, become filled with air on the evaporation of the chloroform which had permeated the entire texture of the shaft. In this way I would in part account for the optical change which ensues, and I think it may be also partly due to some direct action of chloroform upon the mycelium and spores of the trichophyton. I believe that this action of chloroform upon parasitically affected tissues has not been observed before; at all events, the fact is not known to any vegetable histologists with whom I have communicated.

On adding dilute caustic potass to the hairs, the appearance is still maintained to some extent. Seen by reflected light the hairs seem white and frosted, while normal hairs, similarly regarded, appear transparent. I am not aware of any other chemical reagent that produces an effect upon these diseased hairs, in any way comparable to that following the application of chloroform. As already stated, ether has no such effect, nor

has bisulphide of carbon. The latter is of some use as a reagent for showing the mycelium and spores in affected hairs. It renders them readily apparent without distending the hair-shaft; perhaps it may cause very slight shrinking of the fungus-elements.

Dr. McCall Anderson describes the hairs in ringworm as being naturally white. This is sometimes the case; but, even when this is so, the appearance is not always readily appreciable, and the action of chloroform intensifies it very markedly.

In tinea of the body (*Tinea circinata*) and in *Tinea versicolor*, the application of chloroform appears to indicate the presence of parasitic elements, by the white powdery aspect which the patches assume on its evaporation. That this is not always a fallacious appearance, and due to frayed particles of epidermis which are frequently to be seen on these patches—hence the synonym *Pityriasis versicolor* for one of these affections—is proved by the fact that the surface, as shown by a lens, is sometimes perfectly smooth before the addition of chloroform. By this test, therefore, patches of pigmentary staining, melasma, and the dark portions of skin in leucoderma, may sometimes be distinguished from parasitic disorders, for chloroform has no action upon normal skin when thus momentarily applied.

The employment of this method is of least value, I believe, in such cases of ringworm as are attended with much heaping up of crusts or scales; and it is in these, too, that the broken-off hairs are either few in number, very short, or entangled in the crusts. But the diagnosis in these instances does not usually present any difficulty, and the phase alluded to is probably due in great measure to over-stimulation or too irritating treatment. Even in these cases, after poulticing and liberation of the hairs, the test is quite effectual. I have had no opportunity of trying this method in cases of favus of the scalp, since these are rare in London; but I met lately with several cases of favus of the skin, in which I applied chloroform, but without any particular result. The diagnosis was sufficiently easy, and the microscope confirmed the first impressions formed. It is not, however, without interest to record that the action of chloroform upon the

arcæ and peripheral parts of porrigo decalvans is *nil*. If the latter affection be a parasitic one—a tinea—an opinion which I do not hold, and against which I have recently published my reasons at length (*St. Bartholomew's Hospital Reports*, vol. viii, 1872), it might fairly be expected that chloroform would indicate the presence of the parasite; but such is not the case. No change of any kind occurs either on the patches, in the hair stumps, or in the hairs immediately adjacent, and therefore presumably in the earliest stage of the disorder. This fact must, therefore, be taken as additional evidence against the parasitic theory of porrigo decalvans.

I believe that the chief value of this test is to be found in the later stages of ringworm, when it becomes the duty of the practitioner to declare whether the disease is entirely removed or not. All who have practical knowledge of the difficulties which are in the way of forming an exact opinion upon this point, will welcome this method as a relief from a troublesome resort to the microscope, which has hitherto been indispensable. Not only is much time saved, but a more exact opinion may be pronounced upon the case; and there is the additional advantage that the attendants of the patients may always satisfy themselves as to the eradication of the disease, or the reverse, and may, therefore, withhold or continue the employment of suitable antiparasitic remedies.